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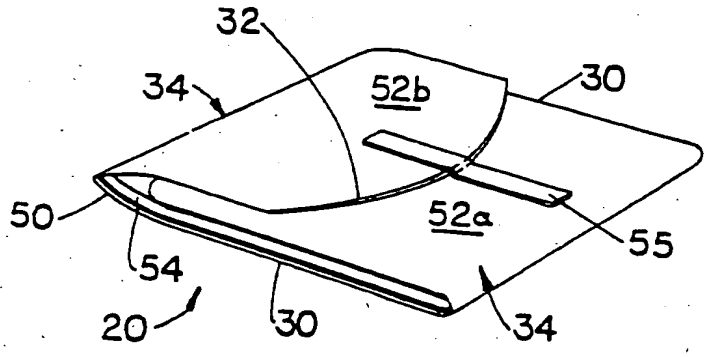

(57) Abstract

A sanitary napkin wrapper (34) and adhesive tab construction (55) for such a wrapper are disclosed. The adhesive tab can, in a preferred embodiment, be applied to the package formed by the wrapper contemporaneously with its own landing member to form a complete fastening system. The sanitary napkin wrapper can also be provided with a flap or pouch (53) in several variations for securing the used sanitary napkin for disposal.

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SANITARY NAPKIN WRAPPER AND ADHESIVE TAB CONSTRUCTION FOR THE SAME

FIELD OF THE INVENTION

This invention is directed to individually packaged sanitary napkins and more particularly to sanitary napkin wrappers and an adhesive tab construction for such wrappers.

BACKGROUND OF THE INVENTION

Sanitary napkins used to collect vaginal discharges are well known in the art. Individually packaged sanitary napkins are disclosed in U.S. Patent 3,973,567 issued to Srinivasan, et al. on August 10, 1976; U.S. Patent 4,917,675 issued to Taylor, et al. on April 17, 1990, European Patent Application Publication No. 0357000 A1 published in the name of Umesh on March 7, 1990, and in U.S. Patent 4,556,146 issued December 3, 1985, to Swanson et al. The Swanson, et al. patent discloses a trifolded wrapper which packages a sanitary napkin, covers adhesive on the outwardly oriented face of the backsheet, and may be used for disposing of the used sanitary napkin.

Other trifolded arrangements are known, such as that disclosed in U.S. Patent 3,604,423 issued September 14, 1971 to Fraser and in International Publication WO 89/02728 published April 6, 1989 in the name of Froidh et al. However, these latter two teachings suffer from the drawback that conveniently removable packaging used in conjunction with a small individually packaged sanitary napkin is not taught.

Discarding used sanitary napkins enveloped in the packaging is also taught in the art. For example, International Publication WO 89/02729 published April 6, 1989 in the name of Pigneul and U.S. Patent 4,608,047 issued August 26, 1986 to Mattingly disclose two packaging arrangements suitable for this purpose.

The search for improved individual package configurations for sanitary napkins has, however, continued.

Accordingly, it is an object of this invention to provide an individually packaged sanitary napkin. It is further an object of this invention to provide an individually packaged sanitary napkin which is easy for the user to open. It is also an object of this invention to provide an individually packaged sanitary napkin with packaging that protects exposed adhesive prior to the first use by the wearer. It is also an object of this invention to provide an individually packaged sanitary napkin having packaging which may be used for disposal of a used product. Finally, it is an object of this invention to provide improved closure mechanisms for maintaining the package in a closed configuration for disposal.

BRIEF SUMMARY OF THE INVENTION

The present invention comprises a sanitary napkin having two mutually opposed major faces, two longitudinal and two lateral side margins. The sanitary napkin has a liquid pervious topsheet, a liquid impervious backsheet joined to the topsheet,

an adhesive patch on the outwardly oriented face of the backsheet and an absorbent core between the topsheet and the backsheet. In one embodiment, the sanitary napkin has two flaps, each with a proximal end joined to one longitudinal side margin of the sanitary napkin. A releasable wrapper having one end juxtaposed with a lateral side margin of the sanitary napkin and releasably affixed to the adhesive on the backsheet of the sanitary napkin. The wrapper further comprises a tab fastening system for releasably securing the wrapper in a folded configuration.

The present invention is also directed to a tape fastening system per se for fastening a first surface to a second surface. The tape fastening system is capable of being affixed contemporaneously to the first and second surfaces. The tape fastening system comprises:

a tape having a first end, a second end, an inner surface facing toward the first surface, and an outer surface facing away from the first surface, the tape comprises

a first portion at the first end of the tape, said first portion comprising a relatively strong first adhesive disposed on the inner surface for permanently affixing at least part of the first portion to the first surface;

a second portion at the second end of said tape, the second portion having a fastening member disposed thereon, the fastening member having an inner surface and an outer surface, the inner surface of the fastening member has a relatively strong second adhesive thereon; and

a complementary release-treated landing member having an inner surface comprising a third adhesive that may be permanently affixed to the second surface, and a release-treated outer surface to which the inner

surface of the fastening member may be releasably affixed.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed the invention will be better understood from the following description taken in conjunction with the accompanying drawings wherein like parts are given the same reference numeral, analogous parts are designated with a prime symbol and:

Figure 1 is a top plan view of a flapped sanitary napkin and releasable wrapper, according to the present invention, and showing a different adhesive configuration at each longitudinal edge of the releasable wrapper;

Figure 2 is a vertical sectional view taken along lines 2-2 of Figure 1;

Figure 3 is a perspective view of a wrapper and a sanitary napkin not having flaps, in a partially trifolded configuration;

Figure 4 is the sanitary napkin and wrapper according to Figure 2 shown in a fully trifolded configuration;

Figure 4A is a side view of a preferred adhesive tab construction;

Figures 4B-4G are side views of some alternatively preferred adhesive tabs;

Figure 5 is a profile vertical elevational view of a variant embodiment having the releasable wrapper folded over one lateral side margin of the sanitary napkin;

Figure 6 is an endwise vertical elevational view of a releasable wrapper which encases both faces of the flaps of the sanitary napkin of Figure 1;

Figure 7 is an endwise vertical elevational view of a sanitary napkin having one flap folded over the topsheet, one flap folded over the backsheet, and a releasable wrapper which C-folds both faces of one flap and both longitudinal side margins;

Figure 8 is an endwise vertical elevational view of a sanitary napkin having one flap folded over the topsheet, one flap folded over the backsheet, and a releasable wrapper which encases both faces of one flap and resembles an e-fold;

Figure 9 is an endwise vertical elevational view of a sanitary napkin having one flap folded over the topsheet, one flap folded over the backsheet, with one flap being inside the releasable wrapper and one flap being outside the releasable wrapper; and

Figures 10-12 are perspective views of the sanitary napkin similar to Figure 3 which show possible locations for a flap feature on the releasable wrapper.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed to a sanitary napkin wrapper and fastening system for the same. The fastening system is shown in one preferred use. It should be understood, however, that the fastening system can be used more broadly and it is not limited to use on any particular type of package.

As shown in Figure 1, the invention is shown in conjunction with a disposable absorbent article, particularly a sanitary napkin 20. The sanitary napkin 20 is used to collect vaginal discharges, such as menses, and to prevent soiling of the

wearer's clothing by such discharges. The sanitary napkin 20 has a body-facing side or face 20a and an opposed garment-facing side or face 20b. The sanitary napkin 20 features a liquid pervious topsheet 22, a liquid impervious backsheet 24, and an absorbent core 26 intermediate the topsheet 22 and the backsheet 24. The perimeter of the sanitary napkin 20 is defined by the two longitudinal side margins (or "side edges") 30 and two lateral side margins (or "end edges" or "ends") 32.

If desired, the sanitary napkin 20 may further comprise at least one flap 28 extending from a longitudinal side margin 30 of the sanitary napkin 20, and preferably two symmetrically opposite flaps 28, one extending from each longitudinal side margin 30 of the sanitary napkin 20.

The sanitary napkin 20 is superimposed on a releasable wrapper 34. The releasable wrapper 34 underlays and is releasably affixed to the outwardly oriented face of the backsheet 24. As used herein, "releasably affixed" refers to the condition of two or more components which may be attached and separated without destruction of or undue distortion to either component. The releasable wrapper 34 is preferably slightly larger than the sanitary napkin 20 as it is defined by the longitudinal and lateral side margins 30 and 32.

Associated with the sanitary napkin 20 and each flap 28 is a means 40 for attaching the sanitary napkin 20 to the undergarment of a wearer. Particularly, each flap 28 may have its own adhesive patch 40b associated with the face of the flap 28 which contacts the undergarment of the wearer and, the central portion of the sanitary napkin 20 laterally intermediate the flaps 28 has adhesive 40a associated with the portion of the sanitary napkin 20 which contacts the undergarment of the wearer. More preferably such adhesive 40a and 40b are joined to the outwardly oriented face of the backsheet 24.

The releasable wrapper 34 contacts the adhesive 40a of the central portion of the backsheet 24, and if desired, the adhesive 40b of the flaps 28, to prevent contamination of such adhesive 40 prior to first use by the wearer. Also, the releasable wrapper 34 provides protection for the sanitary napkin 20 when it is inwardly trifolded and the releasable wrapper 34 is exposed.

Examining the components of the sanitary napkin 20 in more detail with continuing reference to Figure 1, the sanitary napkin 20 has a generally centered longitudinal centerline 36. As used herein the term "longitudinal" refers to an imaginary line, axis or direction of the sanitary napkin 20, which line, axis or direction is typically centered between the side margins of the napkin and is generally aligned with the vertical plane which bisects a standing wearer into left and right body halves. The terms "lateral" or "transverse" refer to an imaginary line, axis or direction generally orthogonal the longitudinal direction and within the plane of the sanitary napkin 20, which is generally sideways aligned relative to the wearer.

The topsheet 22 is the component of the garment which is oriented towards and contacts the body of the wearer and receives bodily discharges. The topsheet 22 is liquid pervious and should be flexible and nonirritating to the skin. As used herein the term "flexible" refers to materials which are compliant and readily conform to the shape of the body or respond by easily deforming in the presence of external forces. Preferably the topsheet 22 is not noisy, to provide discretion for the wearer. The topsheet 22 should be sanitary, clean in appearance and somewhat opaque to hide the bodily discharges collected in and absorbed by the core 26.

The topsheet 22 should further exhibit good strikethrough and rewet characteristics, permitting bodily discharges to rapidly penetrate the topsheet 22 to the core 26, but not flow back through the topsheet 22 to the skin of the wearer. Suitable

topsheets 22 may be made from nonwoven materials and perforated polyolefinic films.

The topsheet 22 has a plurality of apertures to permit liquids deposited thereon to pass through to the core 26. Such apertures may, but need not, be present in the flaps 28. An apertured polyolefinic film topsheet 22 having about 5 to about 60 percent open area, typically about 25 percent open area, and a thickness of about 0.01 to about 0.05 millimeters prior to aperturing and about 0.46 to about 0.51 millimeters after aperturing is suitable.

If desired, the topsheet 22 may be sprayed with a surfactant to enhance fluid penetration to the core 26. The surfactant is typically nonionic and should be nonirritating to the skin. A surfactant density of about 0.01 milligrams per square centimeter of topsheet 22 area is suitable. A suitable surfactant is sold by the Glyco Chemical, Inc. of Greenwich, Connecticut as Pegosperse 200 ML.

A particularly suitable topsheet 22 may be made in accordance with U.S. Patent 4,342,314 issued August 3, 1982 to Radel et al. and U.S. Patent 4,463,045 issued July 31, 1984 to Ahr et al., which patents are incorporated herein by reference for the purpose of disclosing particularly preferred executions of liquid pervious topsheets. A topsheet 22 made of model X-3265 or model P1552 apertured formed film sold by the Ethyl Corporation, Visqueen Division, of Terre Haute, Indiana has been found to work well.

The backsheet 24 may be any flexible, liquid impervious or liquid resistant material, such as a polyolefinic film, and prevents discharges collected by and contained in the sanitary napkin 20, particularly discharges absorbed by the core 26, from escaping the sanitary napkin 20 and soiling the clothing and bedding of the wearer. Preferably the backsheet 24 is not noisy, to provide discretion for the wearer.

The backsheet 24 may also be impervious to malodorous gases generated by absorbed bodily discharges, so that the malodors do not escape and become noticed by the wearer. A low density polyethylene backsheet 24 about 0.01 to about 0.05 millimeters in thickness, preferably about 0.02 millimeters in thickness, has been found to work well. A polyethylene film, such as is sold by the Ethyl Corporation, Visqueen Division, under model XP-39385 has been found particularly well suited for this invention.

Further, the backsheet 24 may be made of a soft clothlike material which is hydrophobic relative to the topsheet 22, e.g., a polyester or polyolefinic fiber backsheet 24 works well. A particularly preferred soft, clothlike backsheet 24 material is a laminate of a polyester nonwoven material lamina and an uniaxially elastically extensible elastomeric film such as described in the aforementioned U.S. Patent 4,476,180 issued to Wnuk.

In a particularly preferred embodiment, the backsheet 24 is slightly larger than the topsheet 22 and intermediate absorbent core 26. In such an embodiment, the topsheet 22 and intermediate absorbent core 26 are peripherally circumscribed by the backsheet 24 which has a radial margin of about 0.5 centimeters to about 1.5 centimeters, preferably about 1.0 centimeter, from the side margin of the topsheet 22. This geometry provides a marginal area of protection should the core 26 become overloaded or the sanitary napkin 20 otherwise fail. In such an embodiment the backsheet 24 and flaps 28 are preferably unitary and coextensive.

The backsheet 24 and the topsheet 22 are preferentially peripherally joined using known techniques, either entirely, so that the entire perimeter of the sanitary napkin 20 is circumscribed by such joining, or are partially peripherally joined. Any arrangement that provides for a unitary assembly and capture of the core 26 intermediate the topsheet 22 and backsheet 24 is suitable. Such an assembly has two mutually opposed major

faces, one defined by the topsheet 22 and one defined by the backsheet 24.

The outwardly oriented face of the backsheet 24 preferably further comprises means 40 for attaching the sanitary napkin 20 to the undergarment of the wearer. Pressure sensitive adhesive 40a has been found to work well. Preferably a strip 40a of longitudinally oriented adhesive provides good protection against either the front or the back of the sanitary napkin 20 being detached from the wearer's undergarment. The strip 40a may be continuous or intermittent. A particularly preferred arrangement utilizes two longitudinally oriented strips 40a, one on each side of the longitudinal centerline 36.

The absorbent core 26 is the means for collecting and containing bodily discharges, particularly menses, deposited thereon or which otherwise traverse through the liquid permeable topsheet 22. The core 26 is the component of the sanitary napkin 20 which receives and retains the bodily discharges. The core 26 is conformable and nonirritating to the skin, and preferably relatively thin. The core 26 may be rectangularly or hourglass shaped. The core 26 preferably has two opposed faces, one oriented towards the backsheet 24 and one oriented towards the topsheet 22.

Suitable core 26 materials include combinations of airfelt, such as cellulose wadding, and fibrated communition pulp; layers of tissue paper; and absorbent gelling materials. If a tissue paper core 26 is selected, tissue paper made in accordance with U.S. Patent 4,191,609 issued March 4, 1980 to Trokhan and incorporated herein by reference to show a particularly preferred tissue paper suitable for the core 26 of the sanitary napkin 20 described herein.

The core 26 need not have a total absorbent capacity much greater than the total amount of bodily discharges to be absorbed. The core 26 is preferably narrow and thin, to be

comfortable to the wearer. For the embodiment described herein the capacity of the core 26 should be at least about 2 grams of 0.9 percent saline solution. Suitable saline solution is sold by Travenol Laboratories of Deerfield, Illinois.

If it is desired to incorporate absorbent gelling materials into the core 26 of the sanitary napkin 20, absorbent gelling materials made in accordance with U.S. Patent Re. 32,649 issued April 19, 1988 to Brandt et al. and incorporated herein by reference for showing particularly preferred absorbent gelling materials are suitable. A suitable core 26 comprises a laminate of absorbent gelling materials and tissue may be purchased from the Grain Processing Corporation of Muscatine, Iowa under Model Number L535.

The core 26 should be sized to register with the topsheet 22 and backsheet 24. The core 26 is preferably interposed between the topsheet 22 and backsheet 24 to prevent the absorbent material of the core 26 from shredding or becoming detached while the sanitary napkin 20 is worn and to ensure proper containment of bodily discharges. This arrangement also provides for a unitary assembly.

The core 26 is preferentially joined to the topsheet 22, and may be joined to the backsheet 24. The term "joined" refers to the condition where a first member or component is affixed, or connected, to a second member or component either directly; or indirectly, where the first member or component is affixed, or connected, to an intermediate member or component which in turn is affixed, or connected, to the second member or component. The joined relationship between the first member, or component, and the second member, or component, is intended to remain for the life of the sanitary napkin 20.

Joining is preferentially accomplished by adhesive bonding the core 26 to the topsheet 22 or the backsheet 24. The adhesive (not shown) may be applied in any suitable spray pattern, such as

a spiral, or in longitudinally oriented beads. The adhesive should be surfactant resistant and of low pressure sensitivity, so as not to stick to the skin of the wearer.

The sanitary napkin 20 preferably has a caliper of less than about 4 millimeters and more preferably less than about 2 millimeters, as measured with a comparator gage having an approximately 80.0 gram test weight and an approximately 10.0 gram comparator foot having a diameter of about 2.54 centimeters and a contact surface area of approximately 5.1 square centimeters. Also, the sanitary napkin 20 of the present invention should have a topsheet 22 surface area of at least about 100 square centimeters to prevent discharged fluids from missing the target area.

The sanitary napkin 20 may also comprise a flap 28 extending from a longitudinal side margin 30 of the sanitary napkin 20, and preferably one flap 28 extending from each longitudinal side margin 30 of the sanitary napkin 20. The flaps 28 have a proximal end 44 which is typically coincident with the juncture of attachment of the flap 28 to the longitudinal side margin 30 of the sanitary napkin 20. Alternatively, the proximal end 44 of the flap 28 may be joined to the sanitary napkin 20 at another location, remote from but juxtaposed with the longitudinal side margin 30.

The flaps 28 extend laterally outwardly from the sanitary napkin 20 and terminate at a distal end 46 which represents the portion of the flaps 28 furthest from the longitudinal side margins 30 of the sanitary napkin 20. The distal ends 46 of the flaps 28 are directed away from the longitudinal centerline 36 and central portion of the sanitary napkin 20. As used herein the phrase "central portion" refers to that part of the sanitary napkin 20 intermediate, particularly laterally intermediate, and defined by the proximal ends 44 of the flaps 28. The flaps 28 may be of any shape desired, with a particularly preferred shape being shown in Figure 1.

The flaps 28 may be comprised of an integral and contiguous extension of the topsheet 22, the backsheet 24, or a laminate of both 22 and 24. Alternatively, the flaps 28 may be made of a separate and independent piece of material joined to the longitudinal side margins 30 of the sanitary napkin 20. Each flap 28 has one face generally coextensive of the topsheet 22 and a mutually opposed face generally coextensive of the backsheet 24. A face of the flap 28 is considered to be coextensive of the topsheet 22 or the backsheet 24 if a line having a lateral component can be drawn from the topsheet 22 or the backsheet 24, respectively, which does not cross a portion of the side margins 30 or 32 at the perimeter of the sanitary napkin 20, unless such portion of the side margins 30 or 32 is generally longitudinally adjacent the proximal end 44 of the flap 28.

The flaps 28 preferably have a means 40 for attaching one face of the flap 28 to the wearer's undergarment or to the other flap 28. The attachment means 40 may be a mechanical fastener or, preferably, pressure sensitive adhesive 40b. If pressure sensitive adhesive 40b is selected, it should be disposed on the face of the flap 28 generally coextensive of the backsheet 24 so that when the flaps 28 are wrapped around the crotch portion of the wearer's undergarment, the adhesive 40b will face the outside of the wearer's undergarment. A generally rectangular patch of adhesive 40b on each flap 28, about 25 millimeters x 20 millimeters in size, works well. Suitable pressure sensitive adhesive 40 is sold by the Anchor Continental, Inc., 3 Sigma Division of Covington, Ohio as 0.02 millimeter pass with Century Adhesive A305-4.

For packaging, the flaps 28 are folded over the topsheet 22 so that the flaps 28 are in the topsheet facing relationship of Figure 2. The flaps 28 are considered to be in a topsheet facing relationship if a line generally perpendicular the plane of the sanitary napkin 20 drawn outwardly from the topsheet 22 intercepts either face of the flap 28. The flaps 28 are preferably folded about the proximal edge 44 so that maximum

coverage of the topsheet 22 is obtained. This arrangement provides a larger area of the topsheet 22 covered by the flaps 28, particularly the area of the topsheet 22 which is generally registered with the wearer's vagina, so that a sanitary and clean appearance of this portion of the topsheet 22 is promoted. It is not necessary that the flaps 28 be folded about the proximal ends 44, that the flaps 28 be in contacting relationship with the topsheet 22, or that no other folds occur between the distal and proximal ends 44 and 46 of the flaps 28. It is only necessary that the flaps 28 face towards the topsheet 22 and discourage outside contamination from readily soiling the portion of the topsheet 22 covered by the flaps 28.

Folding the flaps 28 in the configuration of Figure 2 exposes the patch 40b of adhesive on the face of the flaps 28 generally coextensive of the backsheet 24. To prevent contamination and blocking of this adhesive patch 40b, each flap 28 may be covered with a separate and dedicated piece of release liner.

It will be apparent to one skilled in the art, however, that the flaps 28 may be folded over the backsheet 24 or, convolutely folded so that one flap 28 overlays the topsheet 22 and the other flap 28 overlays the backsheet 24. All such embodiments are within the spirit and scope of the claimed invention.

The releasable wrapper 34 has a perimeter defined by longitudinal edges and lateral edges. Preferably, the lateral edges of the releasable wrapper 34 are juxtaposed with the respective lateral side margins 32 of the sanitary napkin 20. This arrangement provides a releasable wrapper 34 having sufficient longitudinal extent to conceal and to protect the sanitary napkin 20 in the later described folded configurations.

The wrapper 34 has opposed faces. One face is an inwardly oriented face which is oriented towards the adhesive 40 and the outwardly oriented face of the backsheet 24. The other face is

an outwardly oriented face opposed to the inwardly oriented face and which is oriented away from the sanitary napkin 20.

Preferably, the inwardly oriented face is release coated, to facilitate easy and convenient manipulation of the releasable wrapper 34, and particularly separation from the adhesive 40. Silicone releases, as are well known in the art, have been found to work well. The releasable wrapper 34 may be zone coated with the release coating only in the areas of the adhesive 40a and 40b, or may be entirely release coated throughout the inwardly oriented face as desired.

The releasable wrapper 34 may be made of films, kraft paper, calendered paper, or other materials as are well known in the art without departure from the spirit and scope of the claimed invention. A particularly preferred releasable wrapper 34 is made of machine glazed or machine finished paper having a basis weight of about 40.7×10^{-3} kilograms per square meter (25 pounds per 3,000 square feet). The inwardly oriented face of the wrapper may be coated with a release coating such as silicone. Suitable release coatings are marketed by Akrosil of Menasha, Wisconsin as Silox 4R/O and Silox C1S.

The releasable wrapper 34 may be made of one or more sheets of material. The wrapper 34 may, for instance, comprise a two component arrangement comprising the wrapper 34 as described herein that is combined with a conventional release strip that covers the adhesive 40a attached to the inwardly oriented face of the wrapper 34. Preferably, however, the releasable wrapper 34 comprises a single sheet that both covers the adhesive 40a and serves as a package for the sanitary napkin 20.

With continuing reference to Figure 2, it can be seen that in one preferred embodiment, the releasable wrapper 34 wraps at least one, and preferably each, longitudinal side margin 30 of the sanitary napkin 20 in a C-fold 50. As used herein, a "C-fold" refers to the configuration of a component which is

folded over itself to provide a double thickness and may have a foreign component interposed between the layers of the folded component. As illustrated in Figure 2, it is preferred that the sanitary napkin 20 and releasable wrapper 34 be equivalently and symmetrically disposed and folded about the longitudinal centerline 36.

In the C-folded arrangement of Figure 2, the entire backsheet 24 is covered by the releasable wrapper 34 and a portion of the topsheet 22 juxtaposed with the longitudinal side margins 30 are also covered by the releasable wrapper 34. As used herein, "releasable" refers to the condition where a first component may be separated from a second component at least once without causing destruction or undue distortion of either component.

The illustrated arrangement provides the advantage that one entire major face, particularly the face associated with the backsheet 24, is protected by the releasable wrapper 34, the longitudinal side margins 30 of the sanitary napkin 20 are likewise protected, and additionally a portion of the topsheet 22 is protected by the releasable wrapper 34. Further, in this arrangement no significant portion of the releasable wrapper 34 extends laterally outboard of the sanitary napkin 20, obviating the need for a bulky package, or a region of the releasable wrapper 34 to be dedicated for sealing of the package.

As illustrated in Figure 3, the sanitary napkin 20 and releasable wrapper 34 may be folded about two spaced-apart laterally oriented fold lines. As used herein, the phrase "spaced-apart laterally oriented fold lines" refers to longitudinally offset lines, generally parallel the lateral direction, and about which the sanitary napkin 20 and releasable wrapper 34 are commonly folded.

Folding the sanitary napkin 20 about the spaced-apart laterally oriented fold lines produces a folded arrangement

defining three trisections 51 and 52, a central trisection 51 intermediate and bounded by two outboard trisections 52. The outboard trisections 52 may be more specifically described as an inner-outboard trisection 52a and an outer-outboard trisection 52b, or more simply as the first and third trisections. The central trisection 51, thus, comprises the second trisection. As used herein, inner and outer outboard trisections 52 are described relative to the central trisection 51 when the sanitary napkin 20 and releasable wrapper 34 are in the folded arrangement of Figure 4. The inner-outboard trisection 52a is generally adjacent the central trisection 51 and intermediate such central trisection 51 and the outer-outboard trisection 52b when folded. Conversely, the outer-outboard trisection 52b is relatively further from the central trisection 51 due to the interposition of inner-outboard trisection 52a.

In the folded arrangement of Figure 4, the package defines two mutually opposed major surfaces, one defined by the outer-outboard trisection 52b, and one defined by the central trisection 51. The arrangement of Figure 4 produces a sanitary napkin 20 having an e-fold with a releasable wrapper 34 having a corresponding e-fold. The releasable wrapper 34 is preferably of sufficient longitudinal dimension to overlie one outboard trisection 52 and the central trisection 51. More preferably, the releasable wrapper 34 is of sufficient longitudinal dimension to overlie all three trisections 51 and 52, so that no adhesive 40a is exposed.

Referring back to Figure 1, the releasable wrapper 34 may further comprise a means for maintaining the sanitary napkin 20 and releasable wrapper 34 in the aforementioned folded arrangement. Suitable means for maintaining the folded arrangement include hook and loop mechanical fasteners, such as are sold under the tradename Velcro; adhesive tabs, such as are illustrated in the prior art, or, preferably adhesive 54 juxtaposed with the longitudinal edge of the releasable wrapper 34.

Preferably the adhesive 54 is placed on the longitudinal edge of the releasable wrapper which overlays and faces outwardly from the topsheet 22. In one execution, the adhesive 54 may be applied to the outboard trisections 52 so that when the inner-outboard trisection 52a is folded over the central trisection 51 such trisections 50 and 52a are releasably affixed to each other and adhesive is juxtaposed with the outer-outboard trisection 52b so that it may be releasably affixed to the inner-outboard trisection 52a. Alternatively, the adhesive 54 may be applied to the central and outer-outboard trisections 50 and 52b.

In one variation, the adhesive 54 may further comprise and be disposed on a tab 55 longitudinally extending beyond the lateral edge of the outer-outboard trisection 52a. The adhesive 54 of the tab 55 not longitudinally beyond such lateral edge is affixed to the exposed face of the inner-outboard trisection 52b.

The adhesive 54 may be applied in a continuous strip (as shown), in an intermittent strip, or may be a single spot. It is not critical which form the adhesive 54 is applied, only that it have sufficient peel strength to maintain the folded arrangement until it is desired to conveniently open the sanitary napkin 20 and releasable wrapper 34 for the first use by the wearer.

Figure 4A shows one particularly preferred embodiment of an adhesive tab. The adhesive tab arrangement is referred to as a "tape sandwich". The tape sandwich comprises an adhesive tab 55 that is provided with a complementary landing member 57. The tab 55 and landing member 57 form a fastening system, such as adhesive fastening system 59. The fastening system 59 is used to initially secure the package at the time of manufacture and maintain the package in a secured condition until it is opened by the consumer. The adhesive tab 55 is also used to securely reclose the wrapper 34 and the used sanitary napkin 20 for disposal. For reclosing the package for disposal, it is

preferable that the adhesive tab 55 be secured to a portion of the wrapper 34 that does not include a landing member.

The adhesive tab arrangement shown in Figure 4A permits more aggressive adhesives to be used to attach the tape 55 to the wrapper 34 than are possible without such a construction. The tab arrangement shown in Figure 4A can also be applied to the package formed by the releasable wrapper 34 contemporaneously with its complementary landing member 57. Other advantages are described in greater detail below.

The component parts of the fastening system 59 include the tab 55, which preferably comprises a piece of tape. The tab or tape 55 comprises a first portion 61 and a second portion 63. The first and second portions 61 and 63 (and the subcomponents of these sections) can be arranged in several different manners. For instance, they can be separate components attached to the tab 55, etc. Preferably, however, the first and second portions 61 and 63 are contiguous segments of the tab 55.

The first portion 61 of the tape 55 is preferably permanently attached to a first surface during manufacture of the article(s) to which the tape sandwich is attached. The first portion 61, as a result, may also be referred to as a "manufacturer's end". In this case, the first surface 34' is a portion of wrapper 34 near the lateral (or end) edge of the third trisection 52b.

The second portion 63 of the tape 55 extends outward beyond the end of the first surface 34'. The second portion 63 serves at least two main purposes. The second portion 63 forms a releasable bond with the landing member 57 located on a second surface 34''. The second portion 63 is also grasped by the consumer when it is desired to open and close the package. (That is, when the consumer desires to unfasten and refasten the two surfaces). The second portion 63, as a result, may also be

referred to as a "tab portion", "user's portion", or "user's end".

The discussion of the fastening system 59 shown in Figure 4A will employ the following convention for describing the respective surfaces or sides of its components. When the tab 55 is secured to close the package, the side of the components facing the package will be referred to as the "inner", "inside" (or inwardly-facing) surface. These will be designated by the reference number of the component together with the letter "a". The other side of the components will be referred to as the "outer", "outside" (or outwardly-facing) surface. These will be designated by the reference number of the component together with the letter "b". The ends of the components will be referred to by the reference number of the component together with the letters "c" and "d". With this in mind, the components of the fastening system 59 will now be looked at in greater detail.

The first portion 61 of tape 55 has a relatively strong (or aggressive) adhesive, first adhesive, 65 permanently bonded to its inside surface 61a. The first adhesive 65 is used to permanently attach the first portion 61 to the portion of the wrapper 34 near the lateral (or end) edge of the third trisection 52b. The term "permanently attach", as used herein, typically refers to a connection that cannot be unattached without at least partially destroying one of the attached components.

The second portion 63 of the tape 55 in the embodiment shown in Figure 4A, comprises a number of sections. Some of these sections are optional. These include an optional first section or "spacer" (or "spacing section") 63' which has no adhesive on its inside surface 63'a. The spacer 63' provides an adhesive-less length of tape so the tape 55 will not stick to any portion of the wrapper 34 that is not covered by landing member 57 material. The spacer 63', thus, eliminates the possibility of unintentionally creating a permanent seal between the tape 55 and

a second surface 34'', such as the first trisection 52a of the wrapper 34.

The second portion 63 of the tape 55 further comprises a second section or fastening member 63''. The fastening member 63'' is the portion of the tape 55 which is releasably attached to the landing member 57. The fastening member 63'' has an adhesive, second adhesive 67, permanently bonded to its inside surface 63''a. The fastening member 63'' may, thus, be referred to as the "adhesive containing section". The second adhesive 67 is a relatively aggressive adhesive.

The second adhesive 67 is a more aggressive adhesive than could ordinarily be used to form a releasable bond between the tape 55 and the second surface 34'' if the landing member 57 was not present. The second adhesive 67 can be sufficiently aggressive that it would form a permanent bond with the second surface 34'', in the absence of the landing member 57. The upper limit on the strength of the second adhesive 67 is primarily determined by the release characteristics of the landing member 57. Preferably, for ease of manufacture, the second adhesive 67 is the same type adhesive used for the first adhesive 65.

The aggressive adhesives used as the second adhesive 67 preferably require relatively high peel forces as measured according to ASTM STd. D 3330M for Peel Adhesion of Pressure Sensitive Tape at 180 Degree Angle. For example, suitable aggressive adhesives for creating permanent bonds to plastic films typically require forces greater than about 20 to 25 oz. for separation. By way of comparison, adhesives that were typically used previously to create a releasable bond (i.e., without the tape sandwich) could be separated by forces less than about 10 to 20 oz. The ranges provided above are by way of example only. It is understood that the ranges applicable for a particular material are highly dependent on the substrate.

Suitable aggressive adhesives are manufactured by M & C Specialties Company of Southhampton, PA as product numbers 445 and 794, which are listed as being 30 oz. and 50 oz. adhesives, respectively.

The third section comprises a "tab end" at one end of the tape 55. The second portion 63 is, therefore, arranged so that the second section or fastening member 63'' is between the first section or spacer and the tab end or third section 63'''. When the optional tab end 63''' is in the configuration shown in Figure 4A, it preferably has no adhesive on its inside surface. The tab end 63''' of the tape 55 extends further outward from the lateral end of the releasable wrapper 34 and can be used by the consumer to peel the tape 55 away from the landing member 57.

The landing member 57 is any suitable element to which the fastening member 63'' (on the tape 55) can be releasably attached by such aggressive adhesives. The landing member 57 can comprise any material with which such a releasable bond can be formed. Suitable materials include, but are not limited to tape, paper, film, and the like. These materials may be, and preferably are, release treated as described below. The landing member 57 has a surface area which is preferably at least as large as that of the second adhesive.

The landing member 57 shown in Figure 4A comprises a tape, or landing tape. The landing member 57 has its own aggressive adhesive, such as third adhesive 69, on its inside surface 57a. The third adhesive 69 is used for permanently affixing the landing member 57 to a second surface 34'', such as the exposed face of the first trisection 52a.

The outside surface 57b of the landing member is preferably treated with a material to make that surface releasable when contacted by the relatively aggressive adhesive on the second section 63'' of the tape 55. The outside surface 57b can be treated by coating it with a "release material" 71. For

instance, the outside surface can be coated with silicon, lacquers, or it can be treated in any manner known in the art for providing a releasable surface.

The tape sandwich with its complementary landing member 57 is thus, able to permit more aggressive adhesives to be used to attach the tape 55 to the wrapper 34. If the landing member 57 were not used, such more aggressive adhesives might tear the wrapper 34 upon opening the sealed package, particularly if a paper wrapper 34 is used. The tape sandwich arrangement is also advantageous because due to the use of the complementary landing member 57 it is not necessary to tailor the strength of the second adhesive 67 to the properties of the wrapper material. Previously, manufacturers had to attempt to find the narrow range of adhesive strengths that could be used for the wrapper 34 material which was both strong enough to seal the package but not so strong that it would destroy the package or the resealability upon opening. This required a compromise since this narrow range required the use of adhesives that were too weak to reliably form an adequate bond particularly for reclosing the package for disposal by the consumer. The fastening system of the present invention is not dependent on the characteristics of the wrapper, or other substrate. Thus, the same fastening system can be used to releasably attach the tape 55 to numerous different types of substrate surfaces regardless of their material strength and composition.

Figure 4B is an alternative embodiment of the adhesive tab arrangement shown in Figure 4A. In this embodiment, the tab end 63''' is adhesively coated and then folded over on itself and secured to form a folded end tab 72. The folded end tab 72 is easier for the user to grip. The tab in Figure 4B has a second adhesive 67 that extends to the end 55d of the tape 55. The second adhesive 67 need not extend all the way to the end, however. The second adhesive 67 only needs to extend far enough that the tab 55 can be folded over and secured to itself.

Figure 4C shows an embodiment in which the surface area of the landing tape 57 is larger than that of the second adhesive 67. This embodiment provides some room for error in aligning the second adhesive 67 and the landing member 57 during manufacture. It also provides room for error in aligning these two elements if the tape 55 and the landing member 57 are not contemporaneously affixed to the package during manufacture. Figure 4C also illustrates an embodiment in which the area covered by the third adhesive 69 is less than the surface area of the landing member 57. It is thus, not necessary that the third adhesive 69 cover the entire inside surface 57a of the landing member 57.

Figure 4D shows an alternative embodiment in which the landing tape 57 is not used. In Figure 4D, the landing tape 57 is eliminated and the second surface 34'' is coated with a release material 71. Suitable release materials include any of those described previously such as silicon coatings (e.g., Silox), lacquers, etc. The second surface 34'' is coated over the same area where the landing tape 57 could have been located. The coated second surface 34'', thus, provides a "landing surface" 73.

Figure 4E shows a variation of the embodiment of Figure 4C. Figure 4E shows a landing member 57 with a surface area that is much larger than the surface area of the second adhesive 67. More specifically, the landing member 57 is of such a size that it lies at least partially under the first surface 34'. In this case, the landing member 57 lies at least partially under the "flap" on the package formed by the wrapper 34. The advantage of this embodiment is that it eliminates the need for the first section or spacer 63'. This simplifies the construction of the tape 55. In lieu of providing a gap between the first and second adhesives, the first adhesive 65 can be applied over the entire inside surface 55a of the tape 55.

Figure 4F shows an alternative embodiment that does not use a separate tape 55. Figure 4F shows a wrapper 34 that has an

adhesive 75 on the inside surface of its third trisection 52b. Like the adhesives in many of the embodiments described herein, the adhesive 75 could be applied in a patch, a strip, a single bead, etc. Preferably, in this embodiment, it is a single bead. A landing member 57 or landing surface 73 is provided beneath the adhesive. In this embodiment, the wrapper material 34 serves the function of the tape 55. This embodiment provides the advantage of allowing an aggressive adhesive to be used without the need for a separate tape 55.

Figure 4G shows an alternative embodiment in which the tape 55 is eliminated. The second surface 34'' has a landing member 57 affixed to it. The landing member 57 comprises a piece of two-sided or double-sided adhesive tape. The inside surface 57a of the double-sided tape is coated with an aggressive permanent adhesive 69. The aggressive adhesive 69 is used to permanently affix the double-sided tape to the second surface 34''. The outside surface 57b of the tape 57 is coated with a release material 71. The outside surface 57b is then also coated with an aggressive adhesive 75. The aggressive adhesive 75 transfers to the first surface 34' and permanently affixes itself to the first surface 34' when the tape sandwich is brought in contact with the first surface 34. The aggressive adhesive detaches from the double-sided landing tape 57. The coated outside surface 57b of the landing tape 57, thus, provides a releasable fastening surface for securing the aggressive adhesive 75 on the inside surface of the first surface 34' to the landing tape 57.

There are numerous other variations of the embodiments shown in Figures 4A-4G. For instance, there could be more than one tab. In other variations, the relationship between the various tape and adhesive components of the fastening system could be rearranged in a number of different ways. In other variations, alternative types of fastening devices known in the art could be used in these various combinations instead of adhesives. For instance, the landing member 57 and the fastening member 63 could

comprise high static vinyl as is described in U.S. Patent 4,979,613 issued to McLaughlin, et al. on December 25, 1990.

The tab construction described herein could also be used on other types of packages. For instance, any of the embodiments described herein could be used on a package similar to that described in the McLaughlin patent and a sanitary napkin with a conventional release paper could be folded and inserted into such a package.

The tab construction could also be used on other articles, such as on diapers or other types of disposable absorbent articles. Suitable diapers are described in U.S. Patent Re. 26,152, issued to Duncan, et al. on January 31, 1967, U.S. Patent 3,860,003 issued to Buell on January 14, 1975, U.S. Patent 4,909,803 issued to Aziz, et al. on March 20, 1990, U.S. Patent 4,695,278 issued to Lawson on September 22, 1987, and U.S. Patent 4,704,115 issued to Buell on November 3, 1987. Fastening systems for absorbent articles that could either be replaced by fastening systems of the present invention, or that have certain features that could be combined with the fastening system of the present invention to yield new fastening systems are disclosed in U.S. Patent 4,896,724 issued to Scripps on September 26, 1989, U.S. Patent 4,846,815 issued to Scripps on July 11, 1989, U.S. Patent 4,894,060 issued to Nestegard on January 16, 1990, U.S. Patent 4,946,527 issued to Battrell on August 7, 1990, U. S. Patent 3,848,594 issued to Buell on November 19, 1974, U.S. Patent 4,662,875 issued to Hirotsu, et al. on May 5, 1987, and U.S. Patent 5,053,028 issued to Zoia, et al. on October 1, 1991.

Figure 5 illustrates a variant embodiment of the invention wherein the releasable wrapper 34 has a longitudinal extension 56 which overlays at least one, and if desired both, lateral side margins 32 of the sanitary napkin 20. This arrangement provides further protection for the sanitary napkin 20.

If only one longitudinal extension 56 is utilized, preferably, but not necessarily, it overlays the lateral side margin 32 of the outer-outboard trisection 52b. A means to maintain the sanitary napkin 20 and releasable wrapper 34 in the desired folded arrangement may also be advantageously employed with the longitudinal extension 56. In one particularly preferred arrangement, adhesive 58 is disposed on the longitudinal extension 56, particularly on the folded face of the longitudinal extension 56 which faces outwardly and away from the topsheet 22 when the sanitary napkin 20 is not in a folded arrangement and faces towards the opposed outboard trisection 52 when the sanitary napkin 20 and releasable wrapper 34 are folded.

The adhesive 58 may be juxtaposed with the longitudinal edges of the longitudinal extension 56, or generally coincide with the longitudinal centerline, or be positioned on the longitudinal extensions 56 generally coextensive of the longitudinal centerline 36. Using either arrangement, the longitudinal extension 56 of the releasable wrapper 34 is adhered to a portion of the releasable wrapper 34 which is longitudinally inboard of the lateral side margins 32 of the sanitary napkin 20.

Figure 6 illustrates a variation which provides yet additional protection for a sanitary napkin 20 having flaps 28. In Figure 6, the releasable wrapper 34, in addition to C-folding the longitudinal side margins 32 of the sanitary napkin 20, extends laterally inboard to the distal ends 46 of the flaps 28, and C-folds the distal end 46 of one, and preferably of both, flaps 28 of the sanitary napkin 20. The releasable wrapper 34 of such a configuration has a segment interposed between the flap 28 and the topsheet 22. Providing the releasable wrapper 34 extends longitudinally outboard of and between both lateral side margins 32, and the two C-folds 50 which overlay the distal ends 46 of the flaps 28 meet or overlap, the entire sanitary napkin 20 is protected by the releasable wrapper 34 without the necessity of trifolding about spaced apart laterally oriented fold lines.

Figures 7 - 9 generally illustrate embodiments where both flaps 28 of the sanitary napkin 20 are not folded over the same major face defined by the topsheet 22 and the backsheet 24. In the variations illustrated by Figures 7 - 9, the sanitary napkins 20 have one flap 28 folded over the topsheet 22, and the other flap 28 folded over the backsheet 24 in a convolute fold pattern.

At least one, and preferably both, flaps 28 of the sanitary napkins 20 of Figure 7 - 9 have adhesive 40b associated with, and preferably joined to, the face of the flaps 28 which is generally coextensive of the backsheet 24. The flap 28 folded over the topsheet 22 will have the adhesive 40b of the flap 28 facing outwardly, where this adhesive 40b may be covered and protected by the releasable wrapper 34. If the flap 28 folded over the backsheet 24 also has adhesive 40b, such adhesive 40b is preferably covered by an independent piece of release paper (not shown). However, the flap 28 having adhesive 40b exposed by the selected convolute fold arrangement, may advantageously use the releasable wrapper 34 to cover such adhesive 40b, and, as well, cover the adhesive 40a associated with the central portion of the backsheet 24.

In the embodiment of Figure 7, the one flap 28 of the sanitary napkin 20 has its distal end 46 wrapped in a C-fold 50 by the releasable wrapper 34. The corresponding first longitudinal side margin 30 of the sanitary napkin 20 is wrapped in a second C-fold 50. The remainder of the releasable wrapper 34 laterally extends across the sanitary napkin 20, covers the other flap 28, wraps the opposite longitudinal side margin 30 in a third C-fold 50 and extends laterally inwardly towards the longitudinal centerline, to approach the distal end 46 of the flap 28 of the first longitudinal side margin 30. If desired, the longitudinal edge of the releasable wrapper 34 which approaches the distal end 46 of such first flap 28 may overlap the portion of the releasable wrapper 34 which C-folds the distal end 46 of the flap 28.

It is to be understood by one skilled in the art that the first C-fold 50 of the releasable wrapper 34, which wraps the distal end 46 of the one flap 28, need not have its apex close to the distal end 46 (as illustrated), but rather this apex may be laterally displaced therefrom towards the opposite longitudinal side margin 30. As the apex of the C-fold 50 which wraps the distal end 46 of the one flap 28 approaches the opposite longitudinal side margin 30, a greater portion of the major face which such flap 28 overlays is covered and protected by a double thickness of the releasable wrapper 34. If desired, the releasable wrapper 34 of such a variant may be generally coterminous with, or laterally outboard of, such opposite longitudinal side margin 30 rather than be disposed laterally inboard of such opposite longitudinal side margin 30 as illustrated.

In the variation of Figure 8, the releasable wrapper 34 has a first C-fold 50 wrapping the distal end 46 of either flap 28, wraps the corresponding longitudinal side margin 30 of the sanitary napkin 20 in a second C-fold 50. The releasable wrapper 34 extends generally uninterrupted across a major face of the sanitary napkin 20, particularly the major face opposite that which the C-folded flap 28 is folded.

The lateral edge of the releasable wrapper 34 may be generally coextensive with the other longitudinal side margin 30 (as illustrated). It will be recognized that the backsheet 24 may have adhesive 40a covered by an independent release paper (not shown) or may have such adhesive 40a adhered to the inwardly oriented face of the wrapper 34 (as illustrated). Furthermore, the apex of the first C-fold 50 which wraps the distal end 46 of the flap 28 may be adjacent such distal end 46 rather than adjacent the opposite longitudinal side margin 30, or may be at any intermediate position. If a major face of the sanitary napkin is exposed, as not illustrated by Figure 8, preferably the exposed face is that face defined by the backsheet 24, so that the topsheet 22 is protected and remains in a sanitary condition.

Figure 9 illustrates a releasable wrapper 34 which wraps one longitudinal side margin 30 of the sanitary napkin 20 in a C-fold 50 and covers the flap 28 corresponding to this longitudinal side margin 30. It is to be understood by one skilled in the art that the other longitudinal side margin 30 could be wrapped in a C-fold 50 as well, by an extension of the portion of the releasable wrapper 34 which covers such flap 28. A longitudinal edge of the releasable wrapper 34 is interposed between the other flap 28 and the major surface which the other flap 28 overlays.

In yet a further variation (not shown), the sanitary napkin 20 is folded in an S-fold about two spaced-apart transversely oriented fold lines, so that the topsheet 22 of one outboard trisection 52 faces outwardly and is exposed, and the backsheet 24 of the other outboard trisection 52 faces outwardly and is exposed. In an S-folded configuration, the releasable wrapper 34 may be somewhat shorter than the unfolded longitudinal dimension of the sanitary napkin 20, providing the releasable wrapper 34 is applied to the sanitary napkin 20 after it is S-folded.

With an S-folded sanitary napkin 20, the releasable wrapper 34 may overlay the trisection 52 which has the exposed topsheet 22, so that the topsheet 22 is completely covered, and wrap the longitudinal side margins 30 of the sanitary napkin 20 in C-folds 50. The longitudinal edges of the releasable wrapper 34 then overlay the backsheet 24 of the other exposed trisection 52. A feature common to this and any of the foregoing embodiments is that the longitudinal edges of the releasable wrapper 34 may be spaced apart, abut, or overlap as desired.

If desired, the S-folded sanitary napkin 20 may be rotated 90 degrees relative to the releasable wrapper 34, so that the longitudinal axes of the sanitary napkin 20 and the releasable wrapper 34 are mutually orthogonal. The S-folded sanitary napkin 20 is placed on the releasable wrapper 34 so that the trisection 52 of the sanitary napkin 20 having the exposed topsheet 22 is completely covered. One apex of the S-fold and a lateral side

margin 32 is then wrapped by the releasable wrapper 34 in a C-fold 50. In this arrangement, the longitudinal edges of the releasable wrapper 34 bound the exposed backsheet 24 as described above. It will be apparent that this arrangement may be transposed, so that the releasable wrapper 34 overlays the topsheet 22 and the longitudinal edges of the releasable wrapper 34 overlay the backsheet 24.

With each of the S-folded sanitary napkin embodiments, the releasable wrapper 34 does not conform to a similar S-fold, but rather is generally U-shaped. This produces a somewhat shorter releasable wrapper 34 because the central trisection 51 of the sanitary napkin 20 does not have a dedicated length of releasable wrapper 34.

The releasable wrapper 34 (as shown in Figures 10-12) may also comprise a flap (or pouch) 53 to assist in the disposal of the sanitary napkin 20. A suitable flap (or pouch) is described in U.S. Patent 4,556,146 issued to Swanson, et al., the disclosure of which is hereby incorporated by reference herein.

The flap 53 can be used with releasable wrapper 34 embodiments that are configured to wrap the longitudinal side margins of the sanitary napkin in a C-fold (such as those shown in the drawings). In other embodiments, the flap 53 can be used with releasable wrappers 34 that are configured to overlay only one major surface of the sanitary napkin 20 (i.e., not configured to wrap the longitudinal side margins of the sanitary napkin). In still other alternative embodiments, the flap (and/or any other feature described in the Swanson, et al. patent or described herein) could be used with releasable wrappers 34 that are not configured to wrap the longitudinal side margins of the sanitary napkin, and/or are also only folded about a single transverse axis.

There are numerous possible locations on the releasable wrapper 34 for such a flap 53. The flap 53 can be located on

either face of the wrapper, the inwardly oriented face of the wrapper 34, or the outwardly oriented face. The flap 53 is typically located at one of the ends of the wrapper 34. The flap 53 could, thus, be located on one or more of these faces at the end of the inner-outboard trisection 52a, or at the end of the outer-outboard trisection 52b.

Figures 10-12 show three preferred locations for the flap 53. These are designated 53a, 53b, and 53c respectively. The flap in Figure 10 designated 53a is located at the end of the inner outboard trisection 52a. The flap 53a is located on the outwardly oriented face of the wrapper 34. The flap in Figure 11 designated 53b is located on the inwardly oriented face of the same trisection. The flap in Figure 12 designated 53c is located on the inwardly oriented face of the outer outboard trisection 52b. The position of the flap 53 may be chosen (as described below) to provide more options for wrapping the used sanitary napkin for disposal.

The sanitary napkin 20 can be configured for disposal in at least three different ways. The user can roll up the used sanitary napkin 20, and insert it in the pouch (that is, under the flap 53). The remainder of the releasable wrapper 34 can then be folded, rolled, wrapped, etc. around the portion of the pouch 53 containing the sanitary napkin 20. If the releasable wrapper 34 is provided with a tape tab 55, in such a case, the tape tab 55 can be used to secure the releasable wrapper in a folded or rolled up configuration. Alternatively, the sanitary napkin can be folded or rolled up and placed on the end of the releasable wrapper 34 opposite the end containing the flap. The sanitary napkin can then be rolled up in the wrapper 34. The flap 53 can then be pulled over the rolled up portion of the releasable wrapper 34 to secure the package in a rolled up configuration. Alternatively, if in the previous alternative the flap 53 is on the opposite side of the releasable wrapper that the sanitary napkin is placed on and rolled up in, the flap 53

can be turned inside out and pulled over the rolled up sanitary napkin 20 to secure the package.

The alternative location for the flap designated 53b is an especially preferred embodiment because it allows the sanitary napkin 20 to be configured for disposal in all three alternative ways. The other two alternative locations for the flap 53 are not as suitable if the user chooses the alternative of placing the sanitary napkin under the flap 53 and desires to roll up the sanitary napkin 20 and fasten the rolled up sanitary napkin in a rolled up configuration with the adhesive tab 55.

It will be apparent to one skilled in the art that other variations are feasible and within the spirit and scope of the claimed invention. For example, combinations of the foregoing embodiments are feasible, and other means for maintaining the sanitary napkin 20 within the folded arrangement may be utilized. Additionally, other asymmetric arrangements may be utilized and adjustments in the relative sizes of the sanitary napkin 20 and releasable wrapper 34 may be made to accommodate the desired package size. All such variations are within the scope of the claimed invention.

While a preferred sanitary napkin embodiment of the present invention has been described, numerous other sanitary napkin embodiments could be provided with the fastening system and wrapper of the present invention. Some such sanitary napkins are disclosed in U.S. Patent Application Serial No. 07/707,233* entitled "Sanitary Napkin Having Laterally Extensible Means for Attachment to the Undergarment of the Wearer", filed May 21, 1991 in the name of Osborn, et al., U.S. Patents 5,009,653 and 4,950,264, issued to Osborn on April 23, 1991 and August 21, 1990, respectively, U.S. Patent 4,917,697 entitled "Sanitary Napkin Having Flaps and Stress Relief Means" which issued to Osborn, III, et al. on April 17, 1990, U.S. Patent 4,687,478, entitled "Shaped Sanitary Napkin With Flaps", which issued to Van Tilburg on August 18, 1987, U.S. Patent 4,589,876, entitled

(*Equivalent to EP 0426235, published 08 May 1991.)

"Sanitary Napkin", which issued to Van Tilburg on May 20, 1986, and U.S. Patent 4,285,343, entitled "Sanitary Napkin", which issued to McNair on August 25, 1981.

Suitable absorbent articles in the form of pantiliners are disclosed in U.S. Patent 4,738,676 entitled "Pantiliner" issued to Osborn on April 19, 1988. Suitable absorbent articles, at least some of which are in the form of adult incontinence products, are described in U.S. Patent Application Serial Number 07/637,571* entitled "Absorbent Article Having Rapid Acquiring Wrapped Multiple Layer Absorbent Body" filed by Barry R. Feist, et al. on January 3, 1991.

The disclosures of all patents, patent applications (and any patents which issue thereon, as well as any corresponding published foreign patent applications), and publications mentioned throughout this patent application are hereby incorporated by reference herein. It is expressly not admitted, however, that any of the documents incorporated by reference herein teach or disclose the present invention. It is also expressly not admitted that any of the commercially available products described herein teach or disclose the present invention.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention.

(*Equivalent to WO92/11831, published 23 July 1992.)

CLAIMS:

1. A tape fastening system for fastening the first surface of a package to a second surface on the package, said fastening system comprising:

a tape having a first end, a second end, an inner surface facing toward said first surface, and an outer surface facing away from said first surface, said tape comprising

a first portion at the first end of said tape, said first portion comprising a relatively strong first adhesive disposed on said inner surface for permanently affixing at least part of said first portion to said first surface;

a second portion at the second end of said tape, said second portion having a fastening member disposed thereon, said fastening member having an inner surface and an outer surface, said inner surface of said fastening member having a relatively strong second adhesive thereon;

said tape fastening system being characterized in that it also comprises

a complementary landing member having an inner surface comprising a third adhesive that may be permanently

affixed to said second surface, and an outer releasable surface to which the inner surface of said fastening member is releasably affixed, wherein

said second adhesive on the inner surface of said fastening member would be sufficiently strong to form a permanent bond to said material comprising said second surface in the absence of said landing member.

2. The tape fastening system of Claim 1 wherein said first and second adhesives are the same adhesive.

3. The tape fastening system of Claim 1 wherein the inside surface near the end of the second portion of said tape is coated with adhesive and folded over on itself to form a folded end tab.

4. A method of forming a releasable bond between a first surface and a second surface, said method of comprising the steps of:

(a) providing the tape fastening system of Claim 1;

(b) providing a first surface and a second surface; and

(c) affixing the tape fastening system of Claim 1 contemporaneously to said first and second surfaces so that said first adhesive affixes at least part of said first portion of said tape to said first surface at the same time said third adhesive affixes said landing member to said second surface.

5. An individually packaged sanitary napkin comprising a sanitary napkin having a body-facing side, a garment-facing side, two longitudinal and two lateral side margins, said sanitary napkin comprising a liquid pervious topsheet; a liquid impervious backsheet joined to said topsheet, said

backsheet having opposed inwardly and outwardly oriented faces; an adhesive patch on said outwardly oriented face of said backsheet; an absorbent core positioned between said topsheet and said backsheet; a releasable wrapper releasably affixed to the adhesive patch on said outwardly oriented face of said backsheet, said wrapper being folded about at least two transverse axes to define a package body and a package flap; and being characterized in that it further comprises:

the tape fastening system of Claim 1 for releasably securing said package flap to said package body in a folded arrangement wherein said package flap comprises said first surface and said package body comprises said second surface.

6. The individually packaged sanitary napkin of Claim 5 further comprising a disposal flap at one end of said releasable wrapper for use in disposing a used sanitary napkin.

7. The individually packaged sanitary napkin of Claim 6 wherein said releasable wrapper has an inwardly oriented face facing the outwardly oriented face of said backsheet, and an opposed outwardly oriented face, and said sanitary napkin and releasable wrapper are folded about two transverse axes which form said wrapper into a first, second, and third trisections, wherein said first trisection is folded over said second trisection to form said package body and said third trisection is folded over said first trisection to form said package flap.

8. The individually packaged sanitary napkin of Claim 7 wherein said disposal flap is located in said first trisection on the outwardly oriented face of said wrapper.

9. The individually packaged sanitary napkin of Claim 7 wherein said disposal flap is located in said first trisection on the inwardly oriented face of said wrapper.

10. The individually packaged sanitary napkin of Claim 7 wherein said disposal flap is located in said third trisection on the inwardly oriented face of said wrapper.

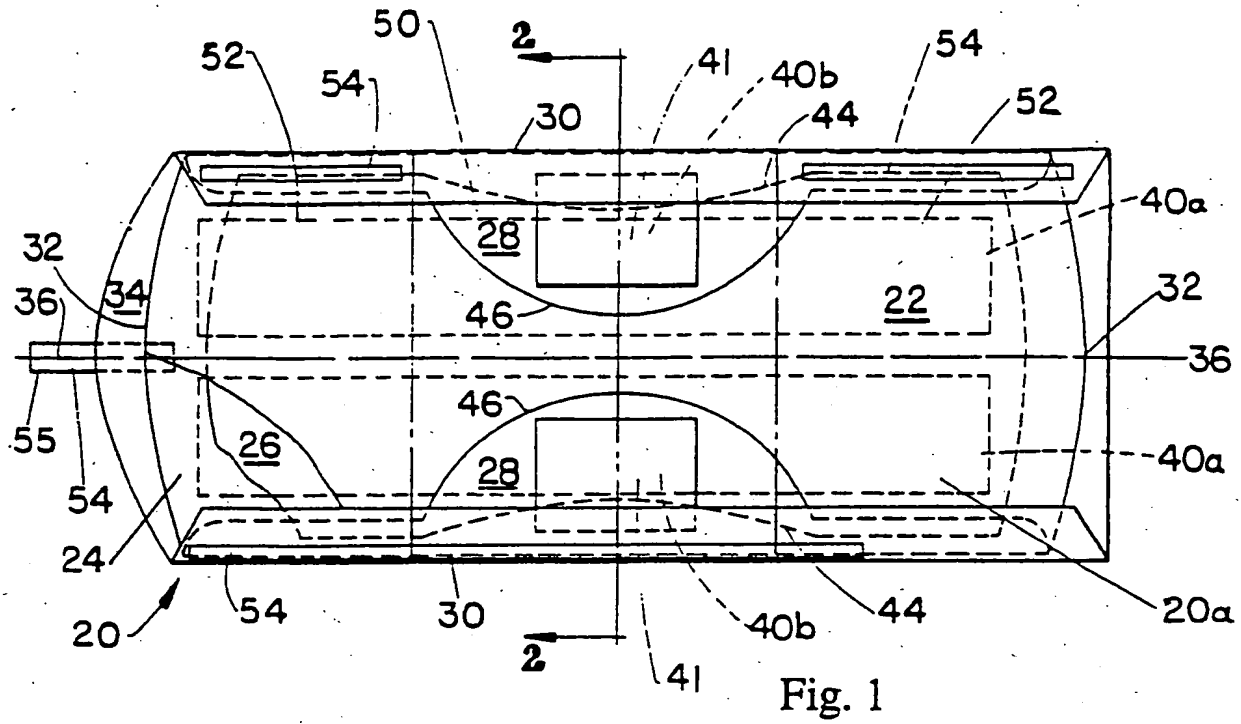

Fig. 1

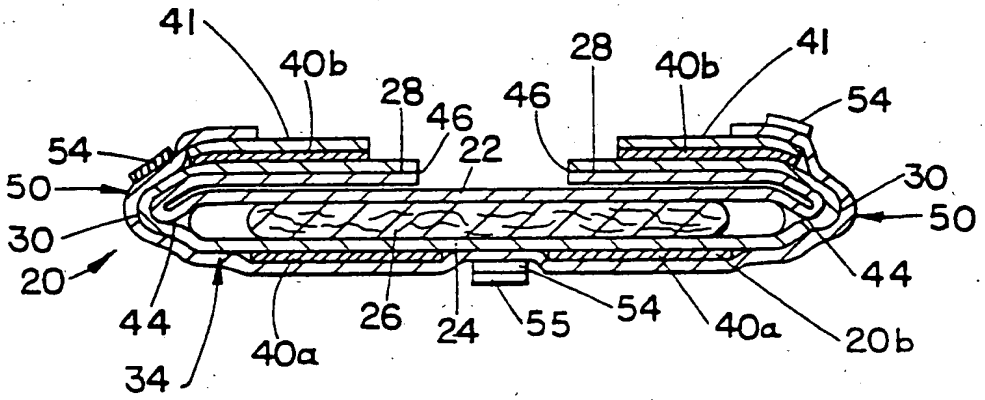

Fig. 2

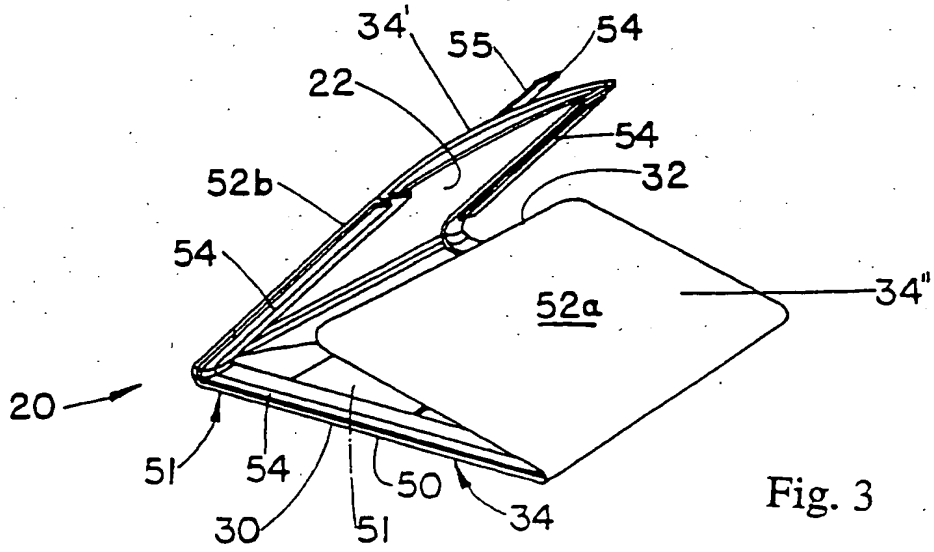

Fig. 3

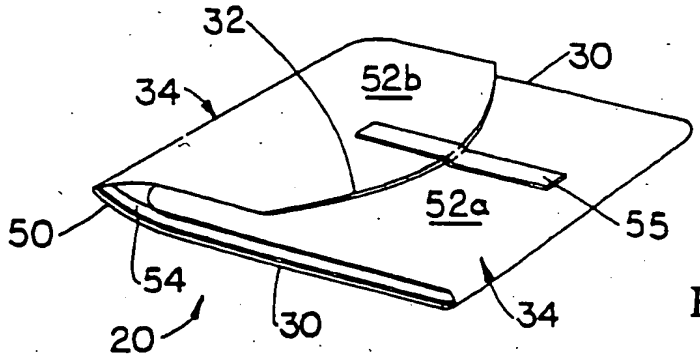

Fig. 4

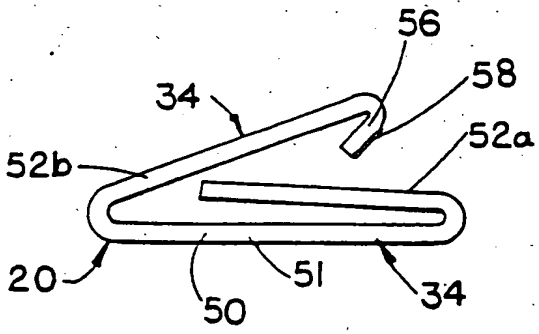

Fig. 5

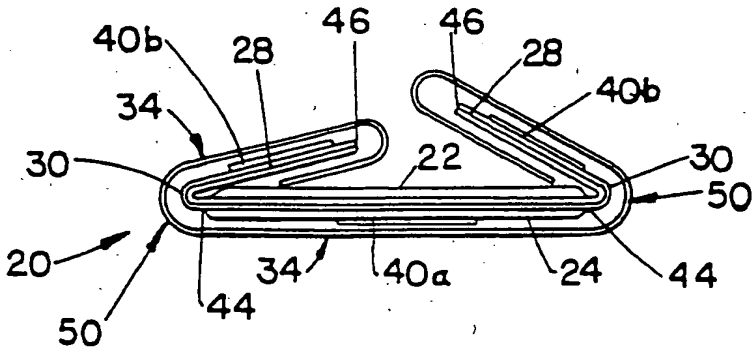

Fig. 6

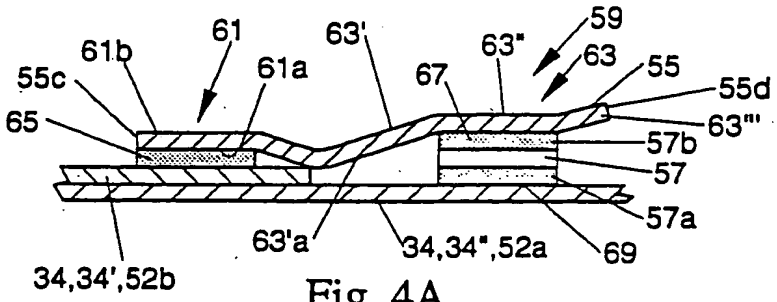

Fig. 4A

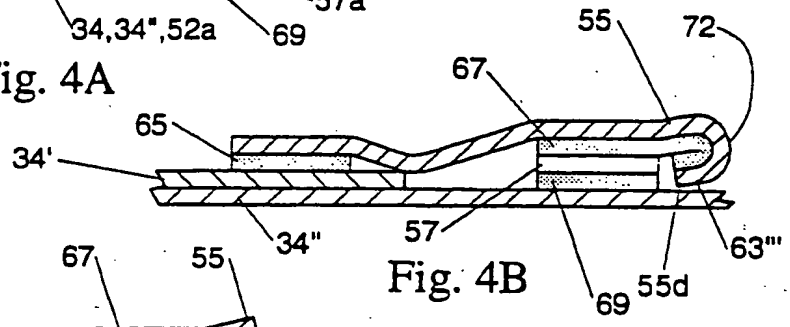

Fig. 4B

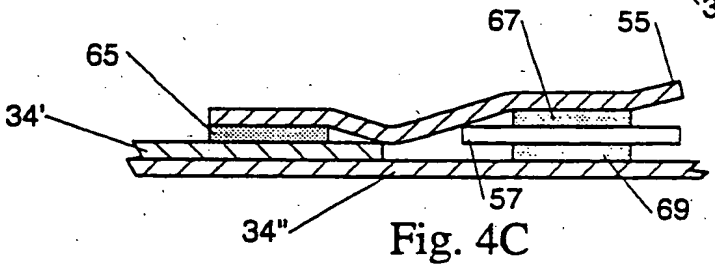

Fig. 4C

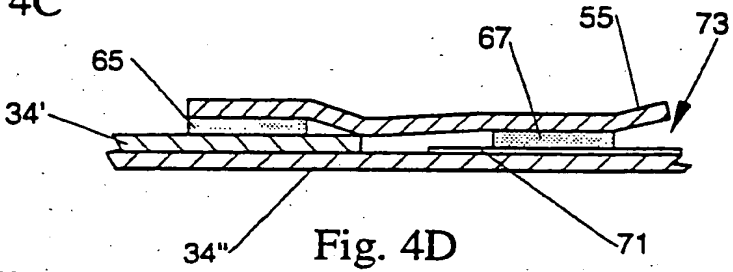

Fig. 4D

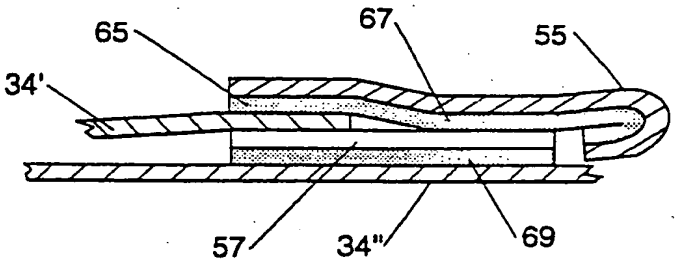

Fig. 4E

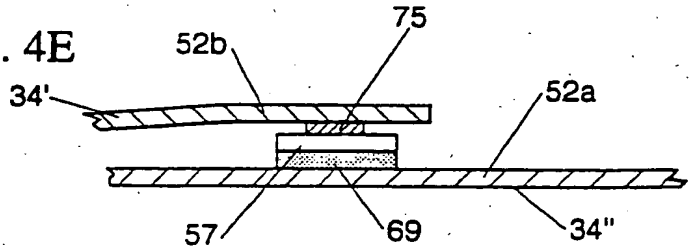

Fig. 4F

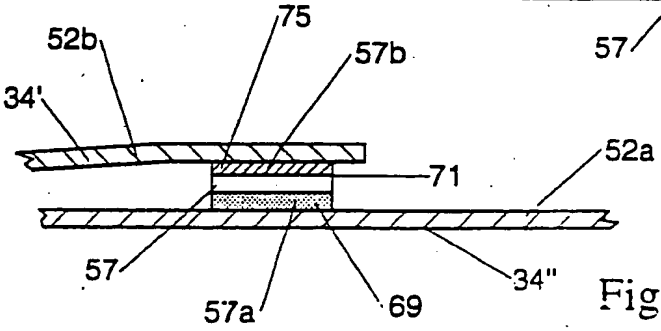

Fig. 4G

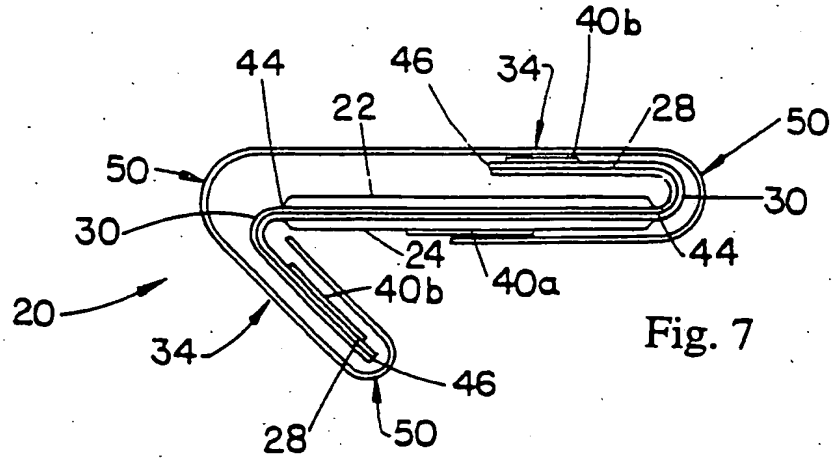

Fig. 7

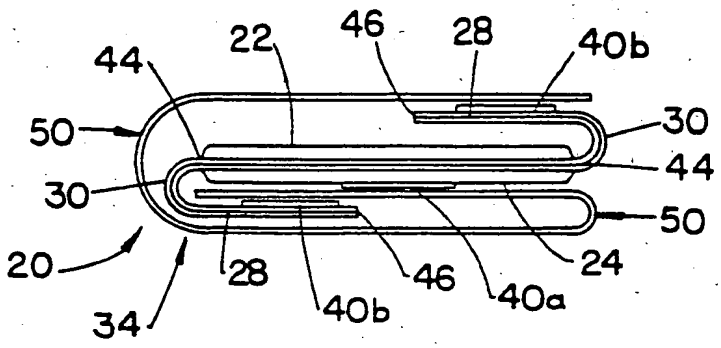

Fig. 8

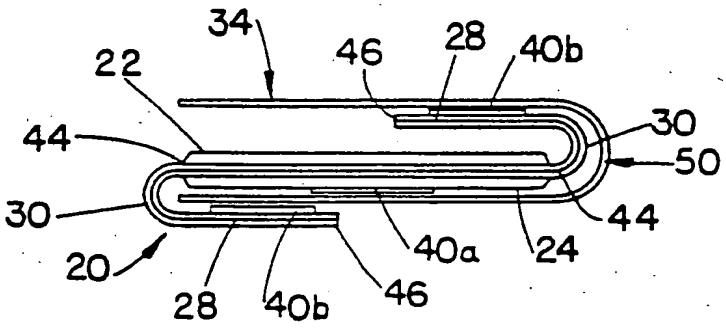

Fig. 9

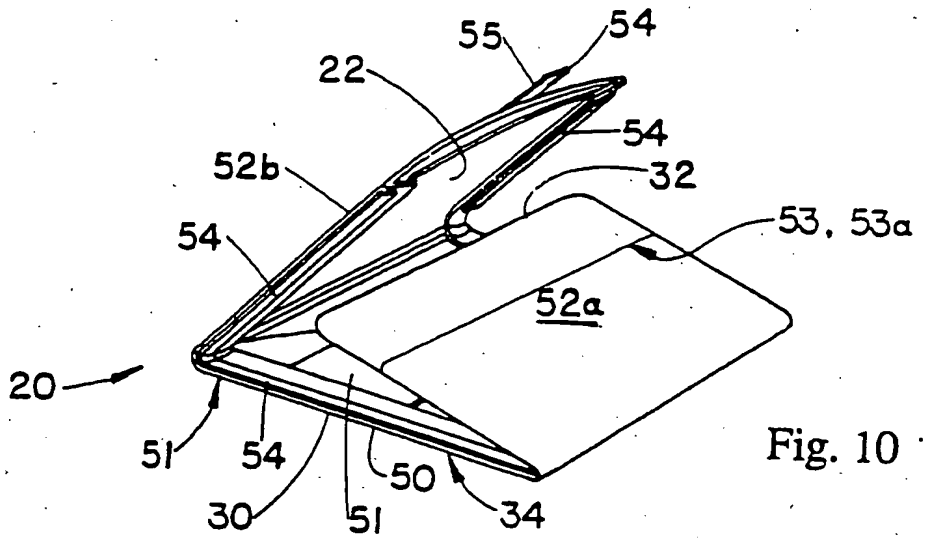

Fig. 10

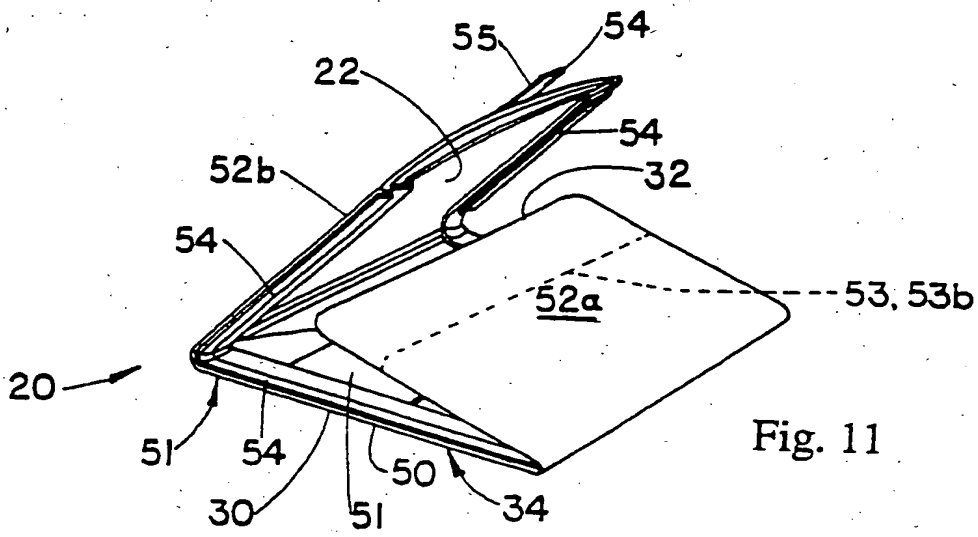

Fig. 11

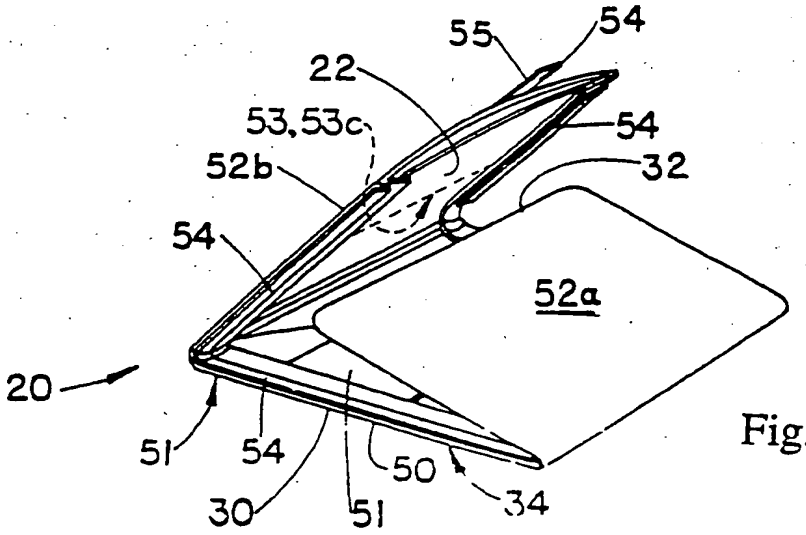

Fig. 12

INTERNATIONAL SEARCH REPORT

International Application No PCT/US 92/09506

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 A61F13/15; A61F15/00

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	A61F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category[a]	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X Y	EP,A,0 080 647 (BOUSSAC SAINT FRERES) 8 June 1983 see abstract; figure 3	1-4 5
X	EP,A,0 259 075 (MINNESOTA MINING AND MANUFACTURING) 9 March 1988 see abstract	1-2,4
Y A	EP,A,0 357 000 (MCNEIL-PPC) 7 March 1990 cited in the application see abstract; figure 1	5 6-10

-/--

[a] Special categories of cited documents :[10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
23 FEBRUARY 1993	18. 03. 93
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	NICE P.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	GB,A,2 153 779 (PROCTER & GAMBLE) 29 August 1985 cited in the application see abstract see page 3, line 111 - line 113; figures 2-3	6-10

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

US 9209506
SA 67226

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 23/02/93

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		FR-A,B 2569952	14-03-86
EP-A-0259075	09-03-88	US-A- 4710190	01-12-87
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		AU-A- 7684087	10-03-88
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		JP-A- 63066305	25-03-88
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